

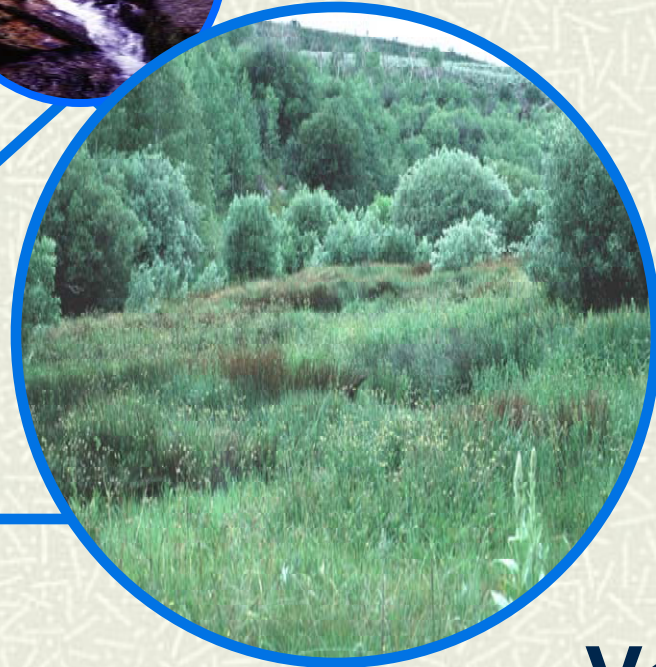
# Natural Riparian Resources

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Water



Landscape & Soil



**Vegetation**

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# Standard Checklist (lotic)

Yes	No	N/A	VEGETATION
			<b>6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)</b>
Rationale:			
			<b>7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)</b>
Rationale:			
			<b>8) Species present indicate maintenance of riparian-wetland soil moisture characteristics</b>
Rationale:			
			<b>9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events</b>
Rationale:			
			<b>10) Riparian-wetland plants exhibit high vigor</b>
Rationale			
			<b>11) Adequate vegetative cover present to protect banks and dissipate energy during high flows</b>
Rationale:			
			<b>12) Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)</b>
Rationale:			

# **Riparian/Wetland Vegetation Groups**

**# Stabilizers**

**# Colonizers**

**# Increasers/Invaders**

# Stabilizer Species

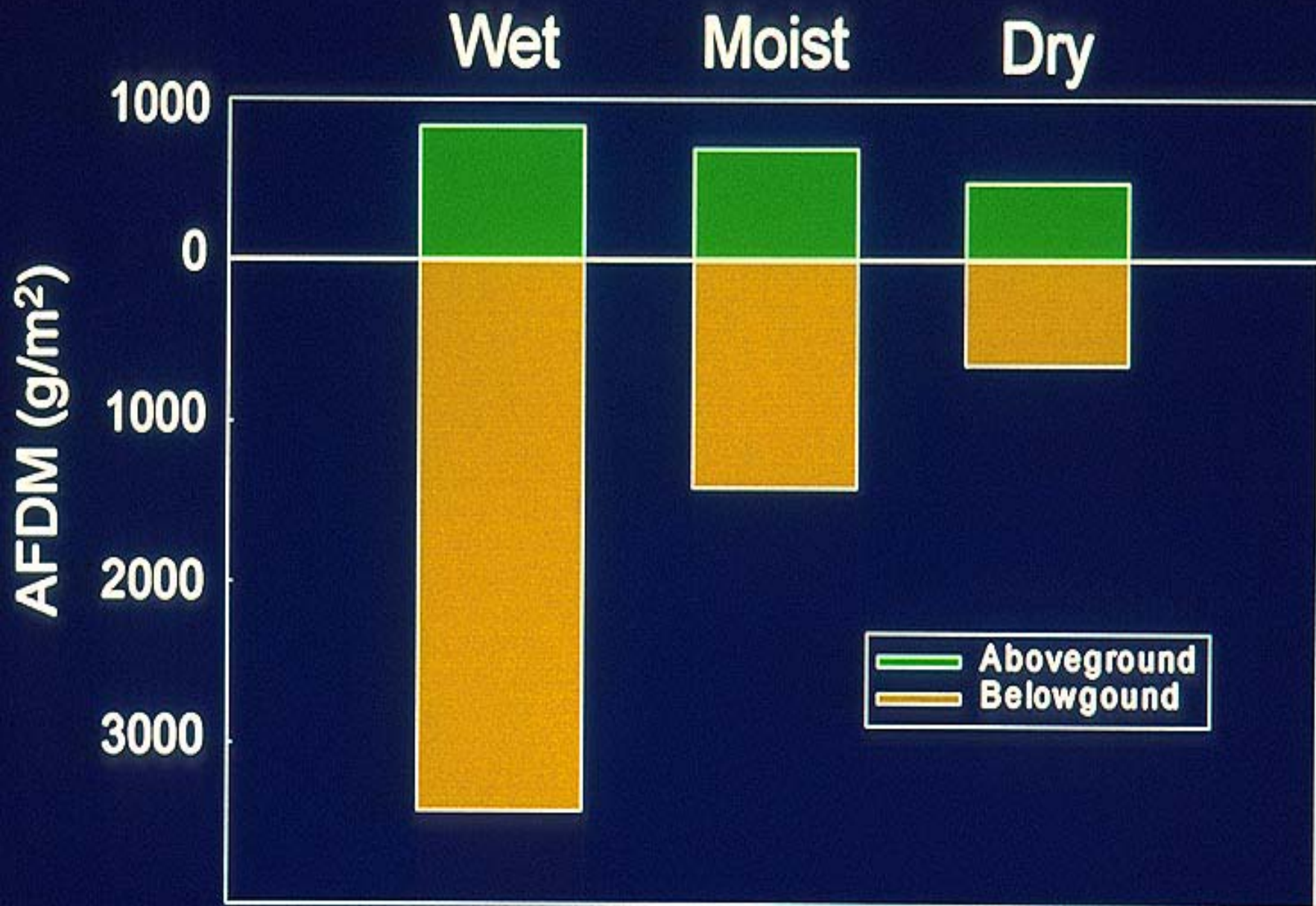


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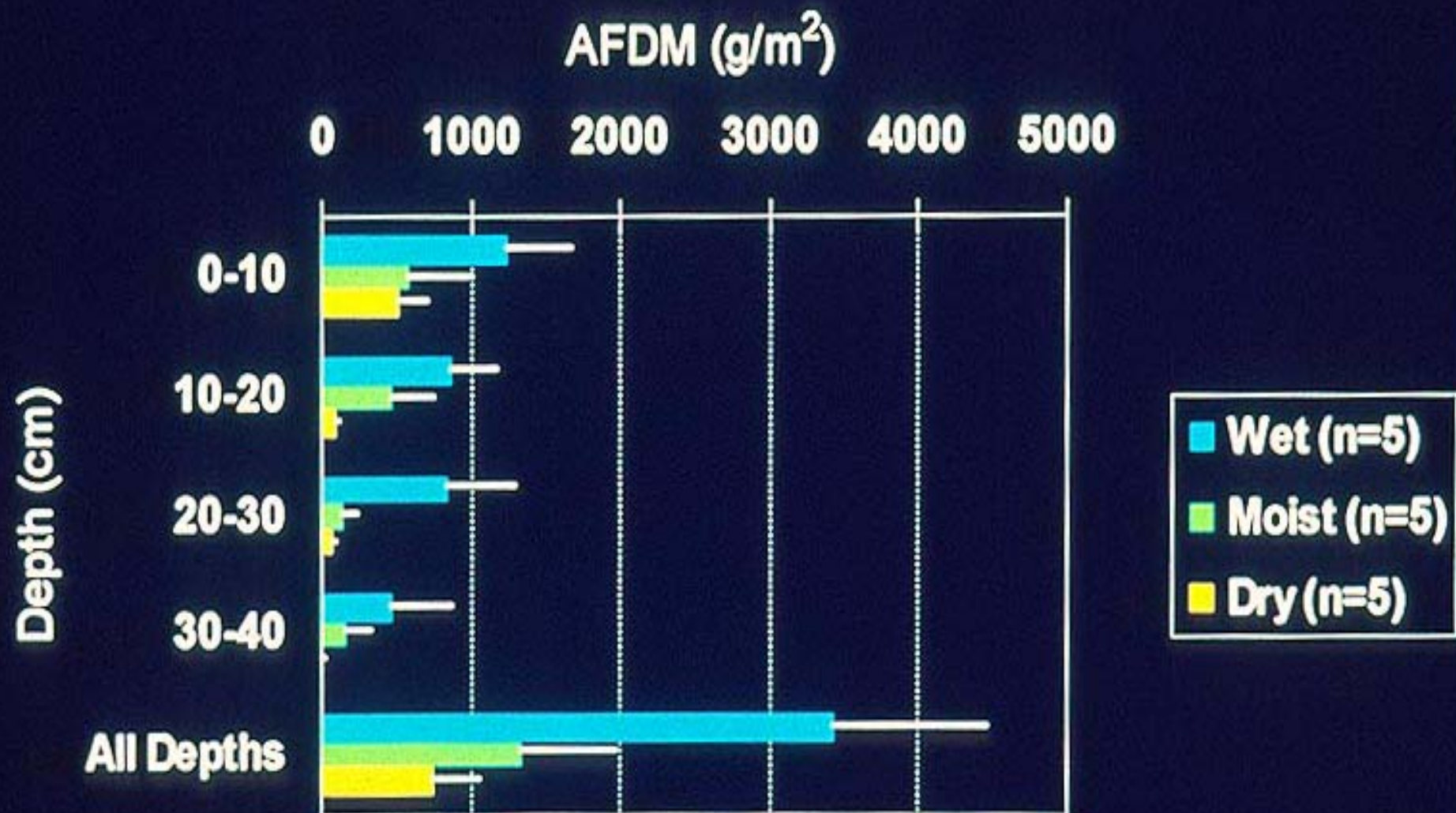
# Stabilizer group

- # Establish along streams, rivers, lakes, ponds, springs, & seeps
- # Strong, fibrous, deep root system
- # Rhizomatous
- # Provide protection against water's energy

# Total Biomass



# Belowground Biomass



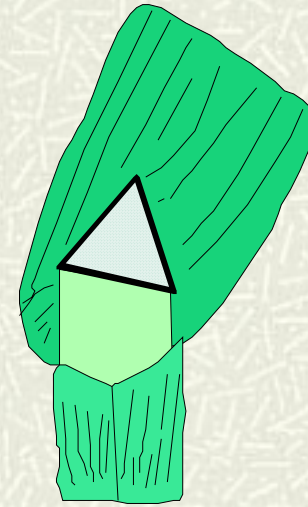
# Sedges (*Carex*)

“Sedges have edges”

Leaves 3-ranked

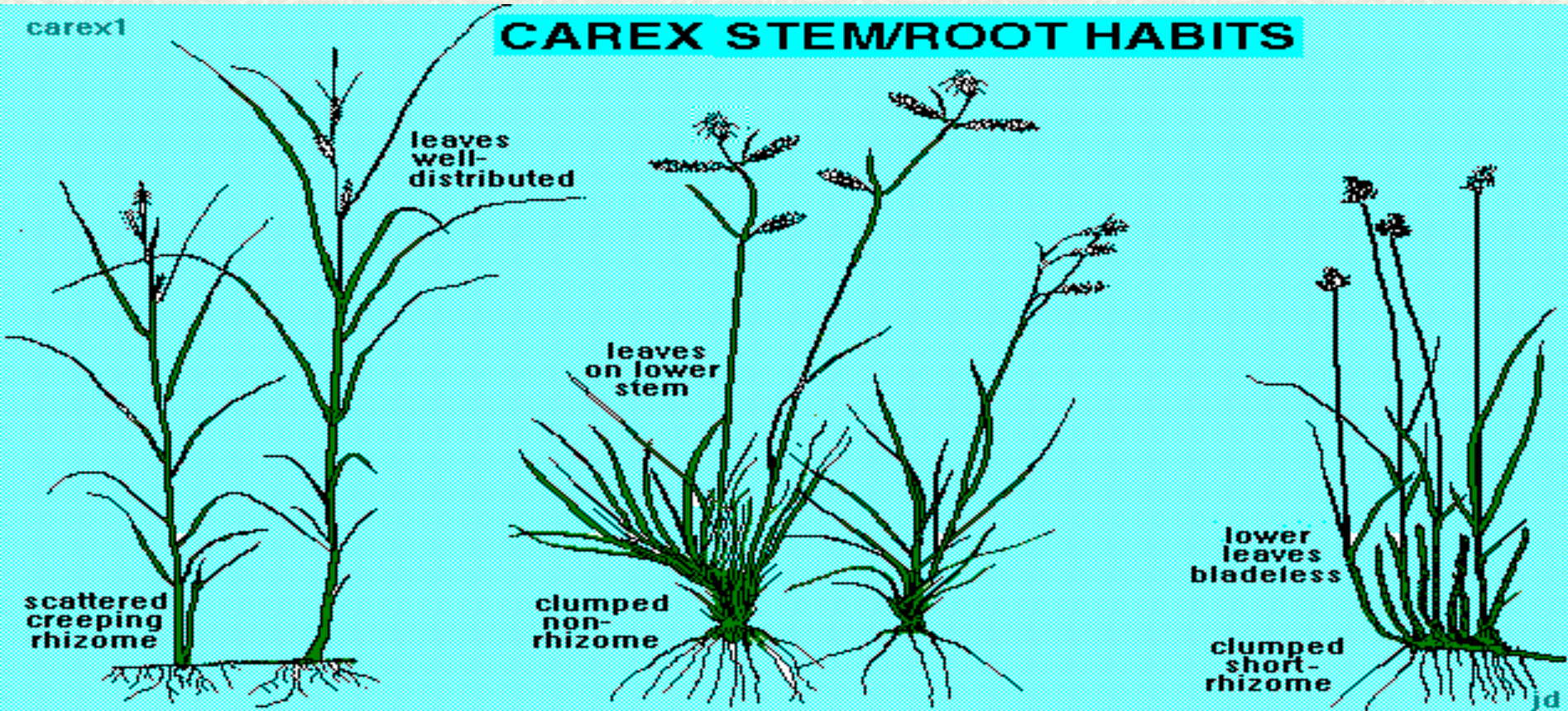


Stem Triangular  
Solid



carex1

## CAREX STEM/ROOT HABITS





Beaked Sedge  
(*Carex utriculata*)  
Formerly  
(*Carex rostrata*)

Typical Habitat  
Saturated Soils



Nebraska sedge  
(*Carex nebarasensis*)  
Emery Creek

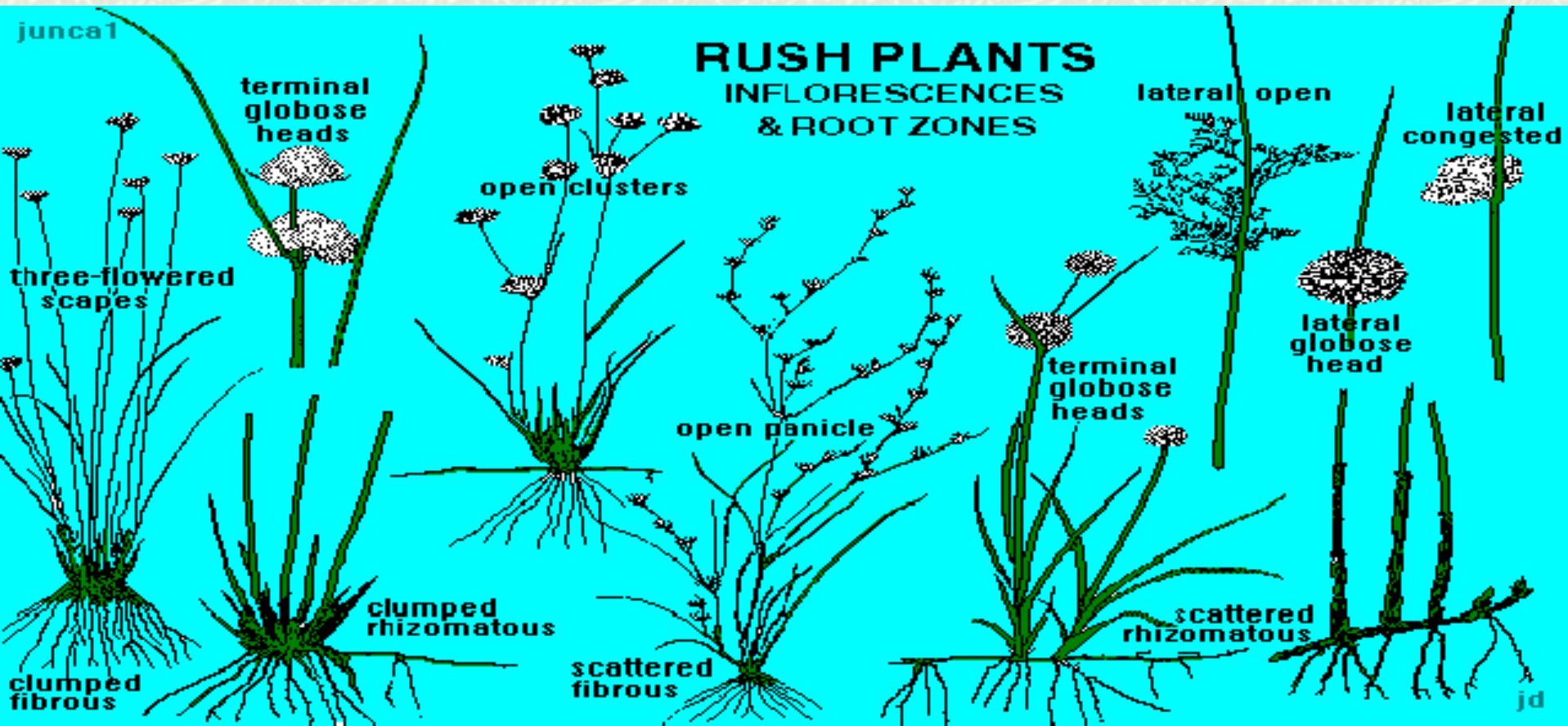
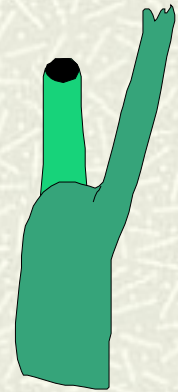
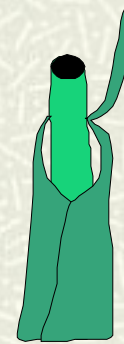
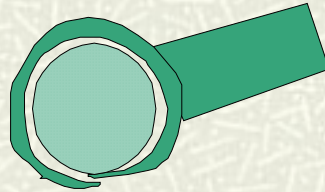


5/28/98

# Rushes (*Juncus*)

“Rushes are Round”

Solid and Round  
or Compressed  
Leaves Alternate or  
2-Ranked





Baltic Rush or Wire Grass  
(*Juncus balticus*)

Typical Growth Pattern

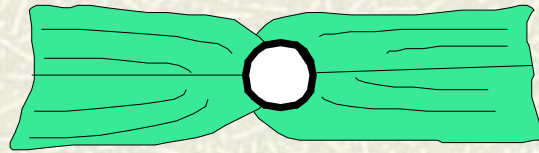


# Wire Grass Roots

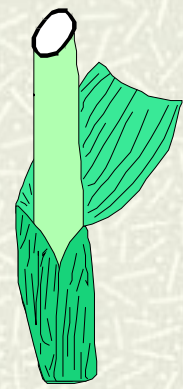


# True Grasses

Leaves 2-ranked

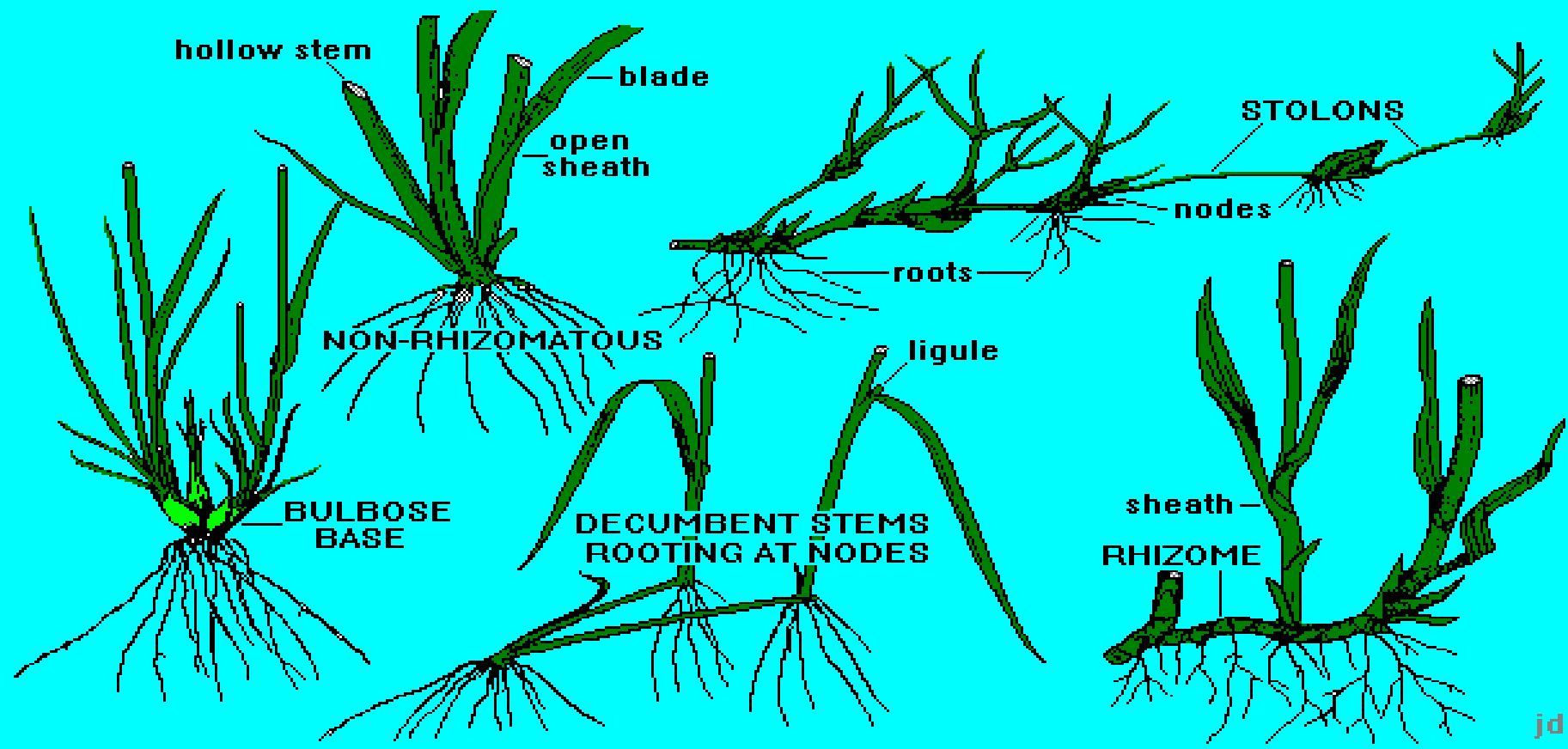


Stem Hollow  
With  
Nodes and Internodes



poac1

## GRASS ROOT ZONE





**Fowl Manna Grass**  
*(Glyceria striata)*

**Blue Joint Reedgrass**  
*(Calamagrostis canadensis)*



Reeds Canarygrass  
(*Phalaris arundinacea*)  
Little Wood River



8 5 '97

# Woody Species

(Willow, Alder, Birch, etc.)



# Willow Roots



JUN 19 2002

Alder



AUG 8 2001



Birch & Willow

JUN 11 2002

Willow

SEP 13 2001

Red osier dogwood



AUG 7 2001

# Colonizers

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## # First to establish

- freshly deposited soil
- shallow open water
- barren areas

## # Root systems

- stoloniferous or rhizomatous
- shallow and relatively weak

## # Critical to recovery

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Brook Grass



Spike Rush

Short-awned Foxtail



**Water-cress**  
(*Rorippa*  
*naturtium-*  
*aquaticum*)



# Coyote (Sand Bar) Willow

(*Salix exigua*)

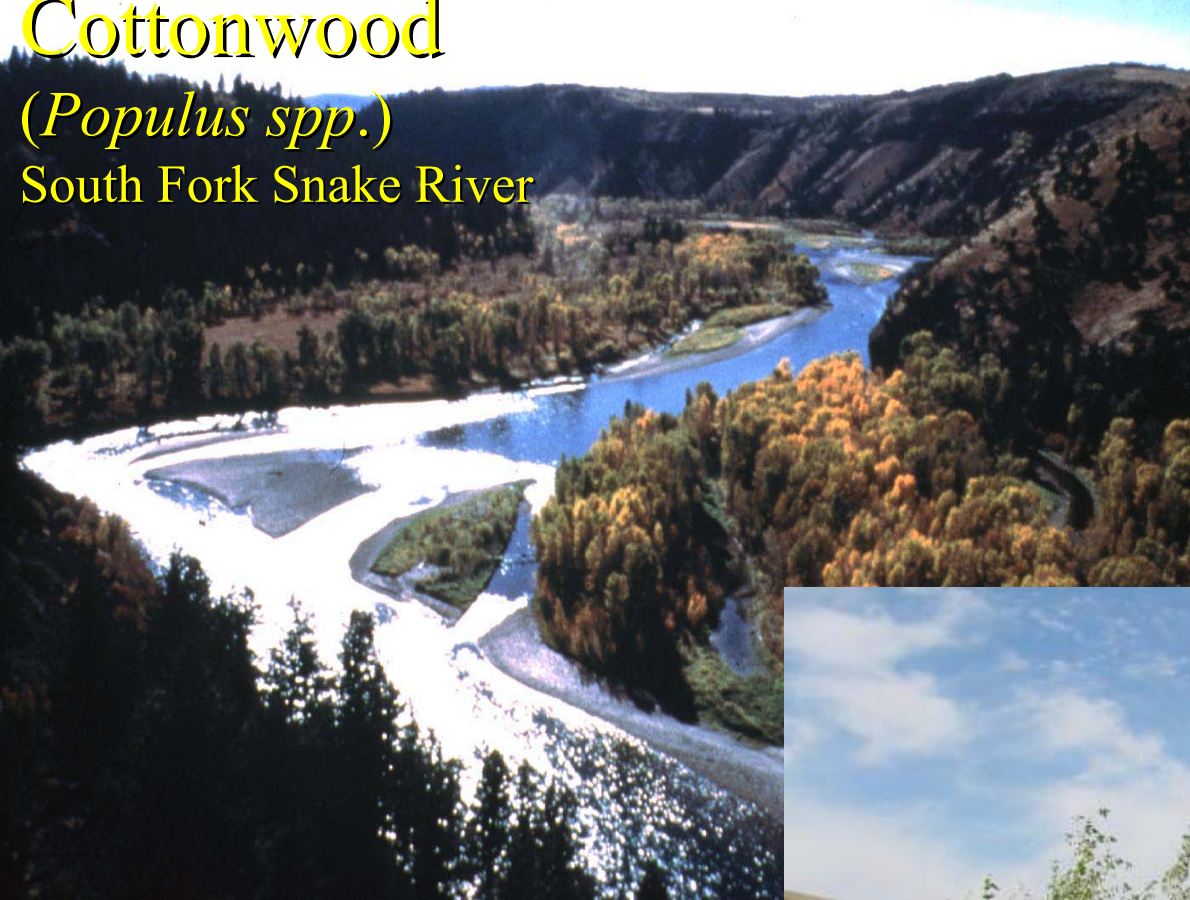
Teton River



# Cottonwood

(*Populus spp.*)

South Fork Snake River



# **Increasers/Invaders**

## **# Tolerant of heavy grazing**

- Increase with heavy grazing
- Low growing points

## **# Shallow, less massive root systems**

## **# Less protective of streambanks against water's energy**

## **# Noxious weeds**

# Kentucky Bluegrass and Red Top

*(Poa prentensis and Agrostis stolonifera)*

East Fork Castle Creek



Leafy Spurge



Purple Loosestrife



6) There is diverse age-class distribution of riparian-wetland vegetation (recruitment for maintenance/recovery)

# Multiple age-classes usually indicate that riparian-wetland areas can recover or maintain themselves

- At least 2 age-classes should be present
- One of the age-class should be young
- Older age classes can persist in degraded conditons

# This is presence/absence question, not an amount



- # Are there two or more age classes of stabilizer riparian/wetland species present within the riparian area?



- Are there two or more age classes of stabilizer riparian/wetland species present within the riparian area?



- # Are there two or more age classes of stabilizer riparian/wetland species present within the riparian area?

7) There is diverse composition of riparian-wetland vegetation (for maintenance/recovery)

# Diverse composition of riparian-wetland vegetation allows for recovery and maintenance

- This is a presence/absence question not amount
- At least stabilizing species present



- # Are there at least two stabilizer riparian/wetland species present within the riparian area?



- # Are there at least two stabilizer riparian/wetland species present within the riparian area?



- Are there at least two stabilizer riparian/wetland species present within the riparian area?

## 8) Species present indicate maintenance of riparian soil moisture characteristics

### ■ Indicators that water table level is being maintained or raised

- Incised Channel
- Aggrading Channel
- Riparian Vegetation
  - Obligate Wetland (OBL) > 99%
  - Facultative Wetland (FACW) 67% to 99%
- Facultative (FAC) 34% to 66%
- Upland Vegetation
  - Facultative Upland (FACU) 67% to 99%
  - Obligate Upland(UPL) > 99%



- # Are stabilizing riparian/wetland species regenerating?
- # Are upland species encroaching into the riparian/wetland area?
- # Has the channel incised leaving remnant riparian/wetland vegetation on the terrace?
- # Is there a water source independent of the stream? (Refer to Question 4)



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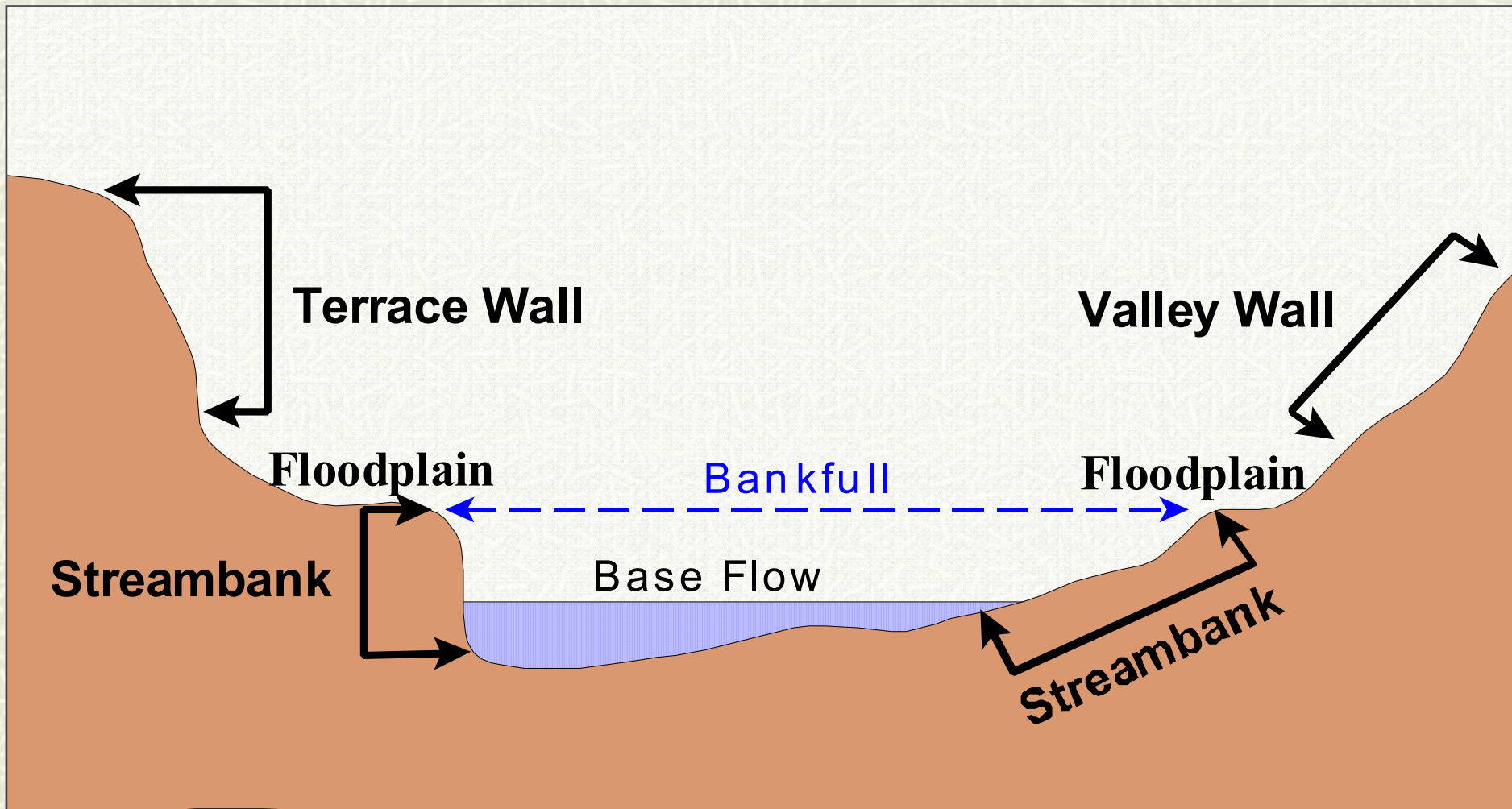
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9) Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high stream flow events

## # Streambank Vegetation

- Streambank is the part of the channel between bankfull and the streambed
- Not a quantity question
  - Presence or absence
- Obligate wetland or facultative wetland plants
- Vegetation must be directly affecting the streambank.

# Streambank





- # Are there stabilizing riparian species or riparian communities on the streambank?



- # Are there stabilizing riparian species or riparian communities on the streambank?

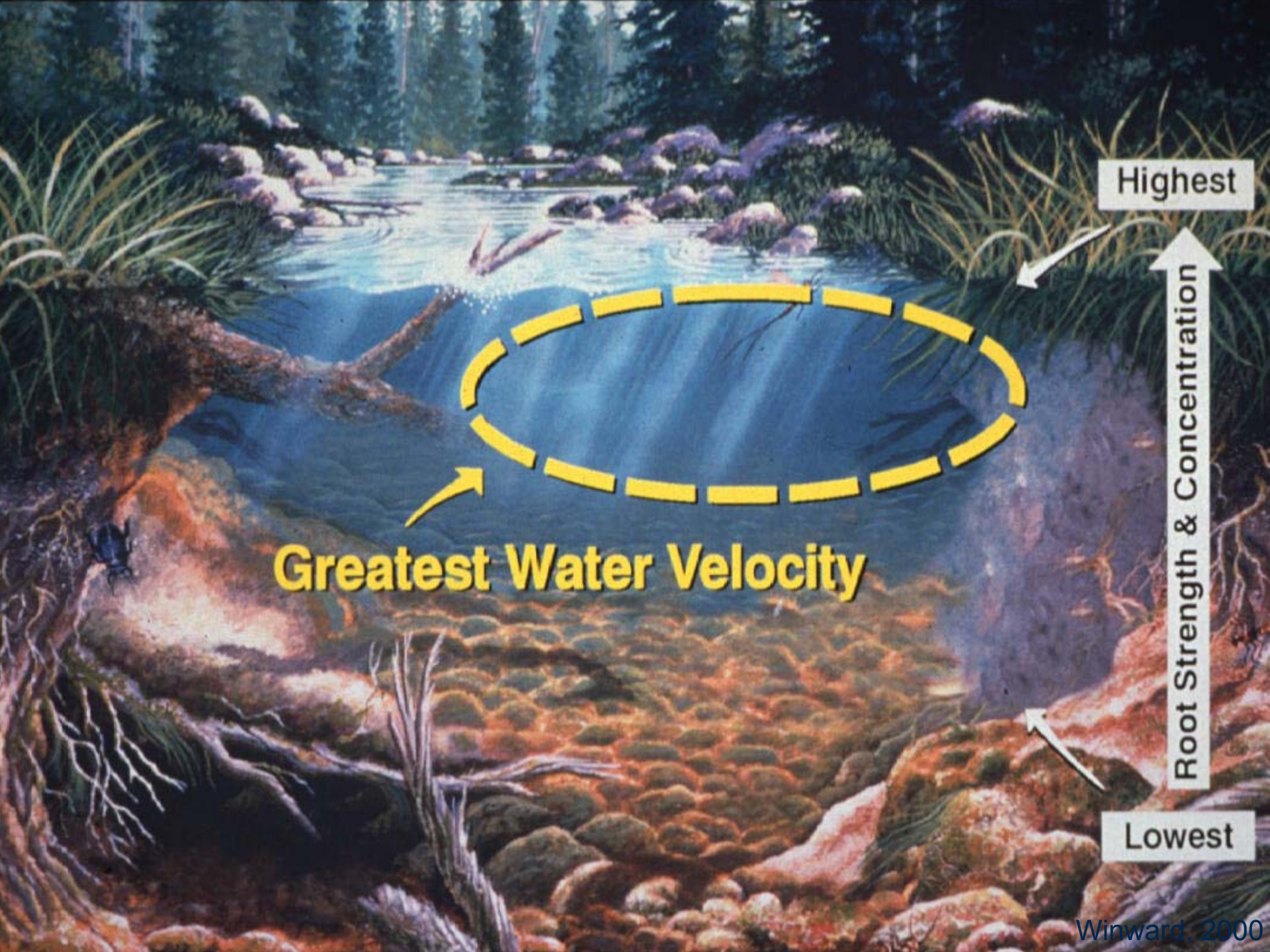
# 10) Riparian-wetland plants exhibit high vigor

- # Determine if plants are healthy and robust
- # Sufficient leaf area for adequate food production
  - To actively reproduced
  - Grow strong deep root systems

# Plant Vigor-Leaves and Roots

*Caring for the Green Zone, Riparian Areas and Grazing Management*  
**Alberta Riparian Habitat Management Project, “Cows and Fish Project”**





Highest

Root Strength & Concentration

Lowest

**Greatest Water Velocity**



- # Are the herbaceous stabilizer (late seral) species obvious individual plants?
- # Are there new stabilizing herbaceous plants around the perimeter of the mat?
- # Are leaf blades of the sedges relatively wide?



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- # Are there new stabilizing herbaceous plants around the perimeter of the mat?
- # Are leaf blades of the sedges relatively wide? Are non-rhizomatous woody species short with over 10 stems at the base?
- # Do woody species have a club look, multiple branching, at the end of the stems?



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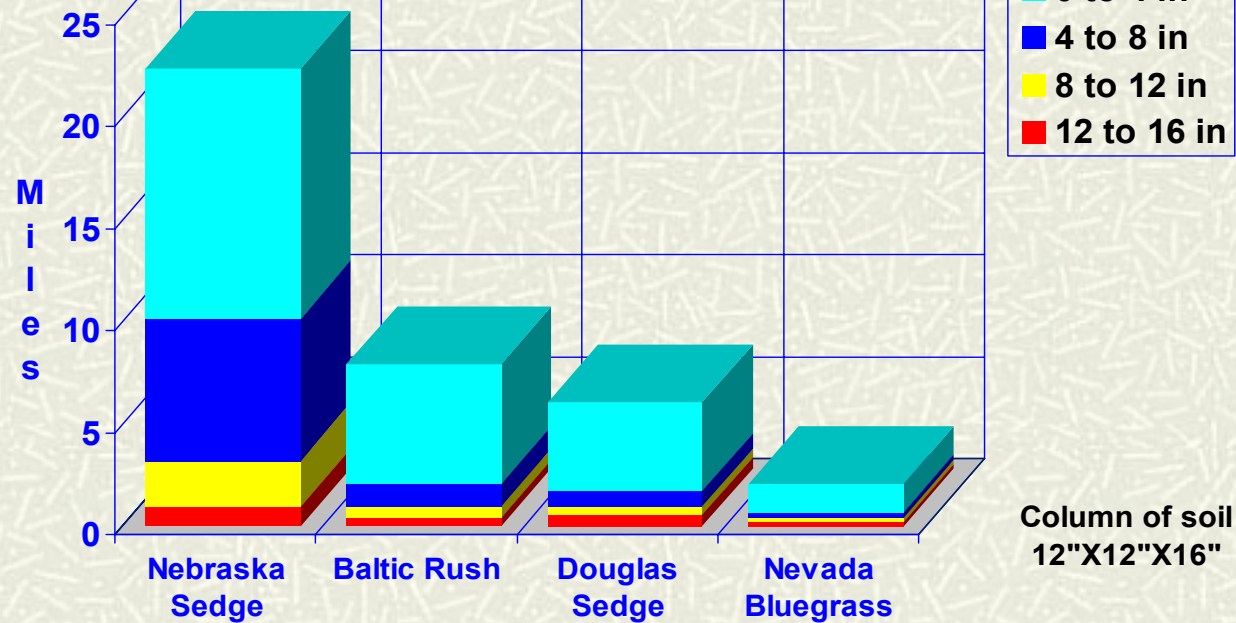


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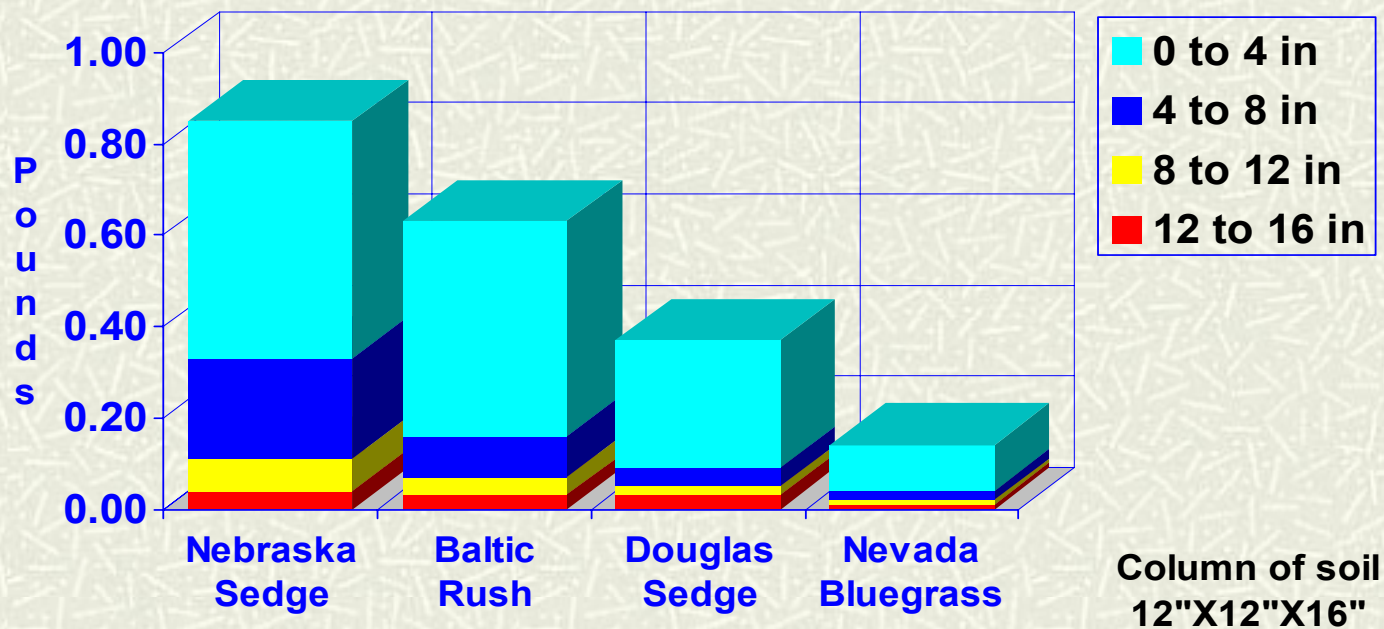
11) Adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows

# Adequate amount of vegetation along streambanks and floodplain

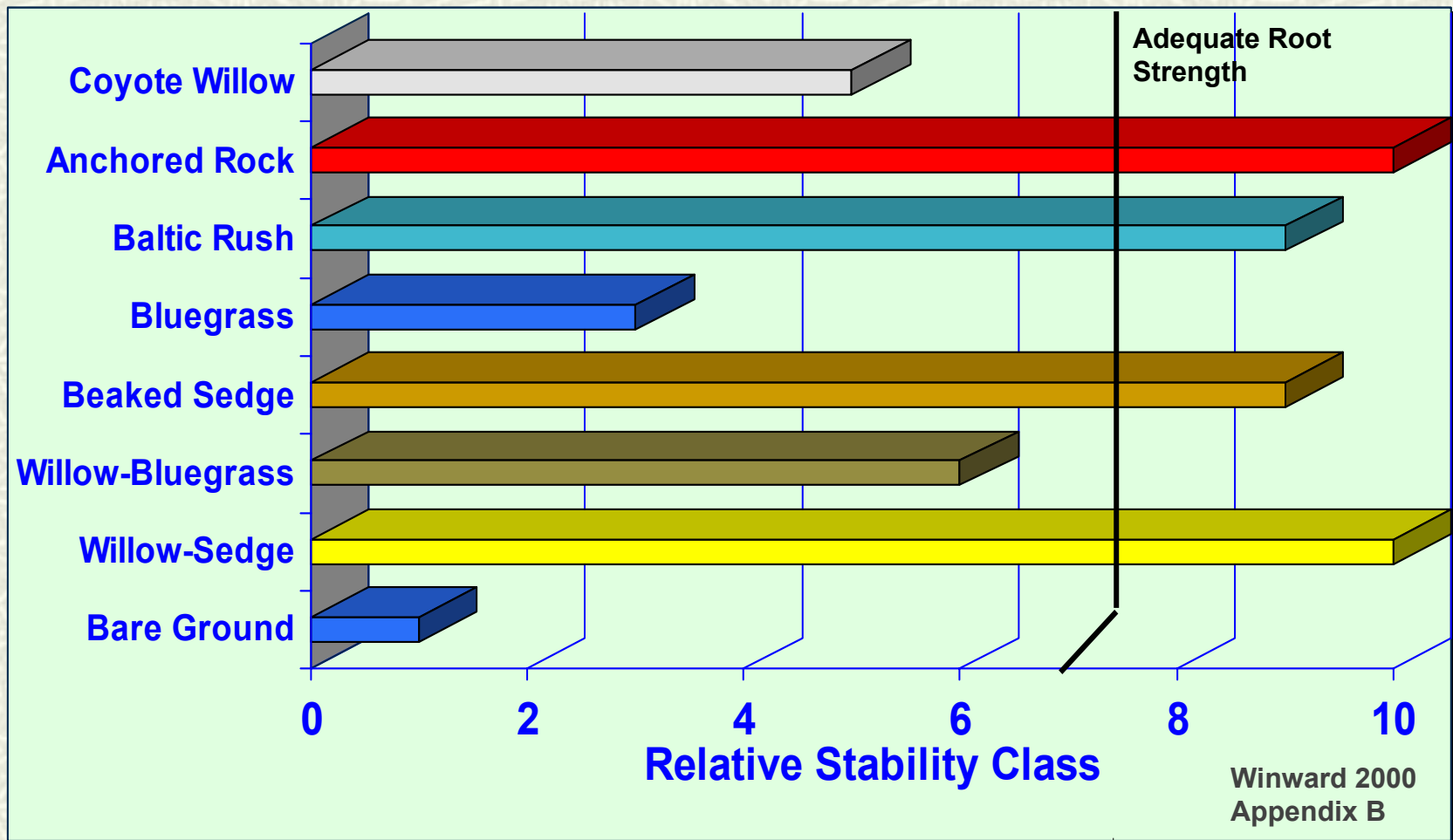
- Dissipate energy
- Prevent erosion
- Filter sediment, etc.



### Root Mass (Weight)



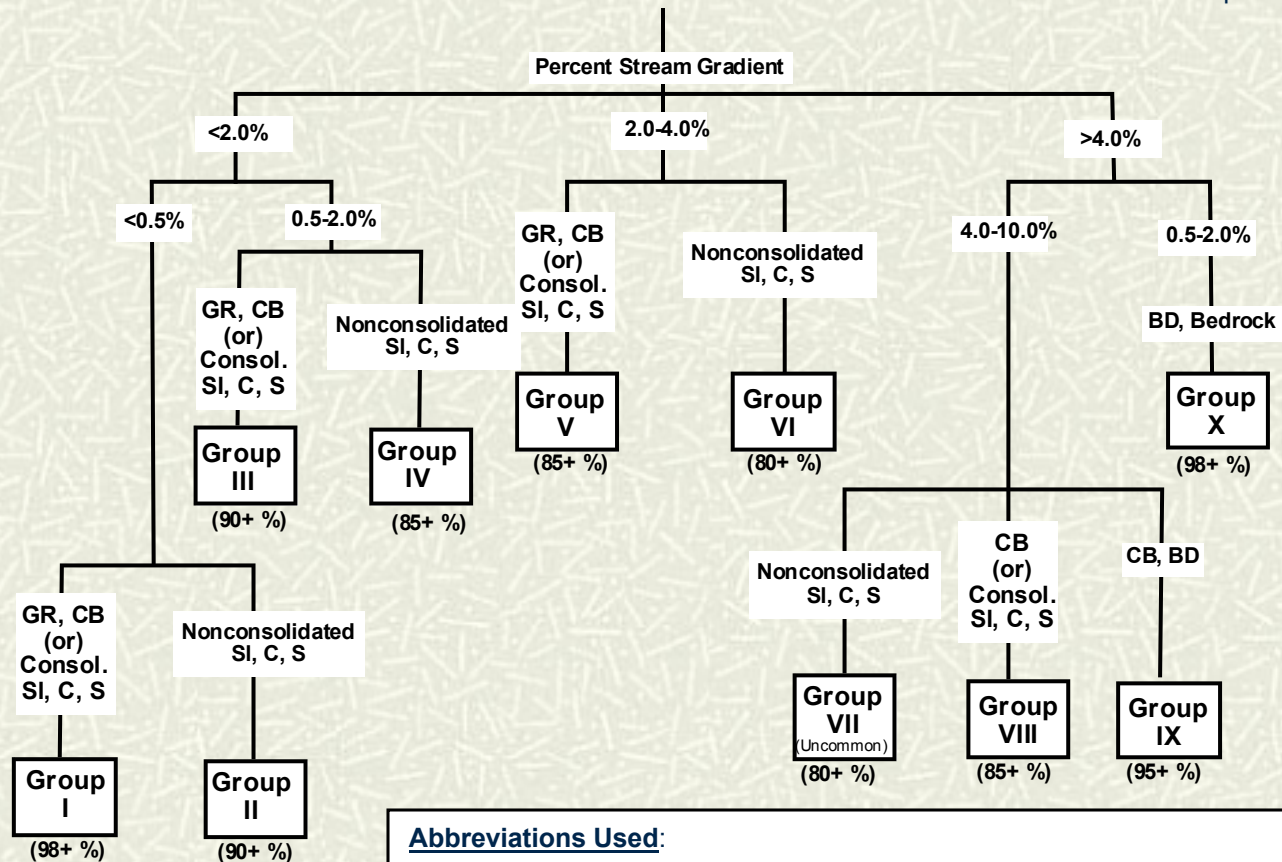
# Channel Stability Rating (Vegetation)



# Key to Greenline Riparian Capability Groups (Winword 2000)

## Percent gradient and substrate classes modified from Rosgen (1996).

USDA Forest Service Gen. Tech. Rep. RMRS-GTR-47. 2000



### Abbreviations Used:

SI .....Silt .....<0.02 mm  
 C .....Clay .....0.02-0.05 mm  
 S .....Sand .....0.05-2.0 mm  
 GR .....Gravel .....0.2-76 mm .....08-3 in  
 CB .....Cobble .....76-250 mm .....3-9.8 in  
 BD .....Boulder .....>250 mm .....>9.8 in  
 Consol. ....Consolidated Material  
 Non-Consol. ..Non-Consolidated Material

Values in parentheses refer to percent of the greenline that should be represented by late seral community types or anchored rocks/logs when riparian areas fitting each capability group are functioning properly.

(Co Consolidated material refers to situations where at least one major soil horizon within the root rooting zone consists of strongly compacted, cohesive, or Ce cemented particles.

## 8 Mile Creek



- # Are the streambanks covered with sufficient stabilizing species to protect it from them from erosion (See Winward 2000, p34)?
- # Is the stabilizing riparian vegetation adequate on the floodplain?
- # Are the stabilizing species vigorous (see question 10)?



- # Are the streambanks covered with sufficient stabilizing species to protect it from them from erosion (See Winward 2000, p34)?
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- # Are the stabilizing species vigorous (see question 10)?

12 - Plant communities are an adequate source of coarse and/or large woody material (for maintenance/recovery)

- # Source of coarse or large woody material dissipate energy, trap sediment, build floodplains
  - Sufficiently large to act as a hydrologic modifier
    - Coarse wood ⤵ 4 inches X 4 feet and anchored
    - Large wood ⤵ 12 inches X 4 ft
- # Rangeland streams without aspen, cottonwood, etc. usually does not require large wood



- # Is the reach capable of growing trees, e.g. cottonwood, aspen and conifers?
- # Is large or coarse debris a necessary hydrologic controls? Is the site dominated by stabilizing shrub species?
- # Has the site had the trees removed from the site?
- # Are there trees growing within one tree height of the stream channel?

## Fish Creek



- # Is the reach capable of growing trees, e.g. cottonwood, aspen and conifers?
- # Is large or coarse debris a necessary hydrologic controls?
- # Is the site dominated by stabilizing shrub species?
- # Has the site had the trees removed from the site?
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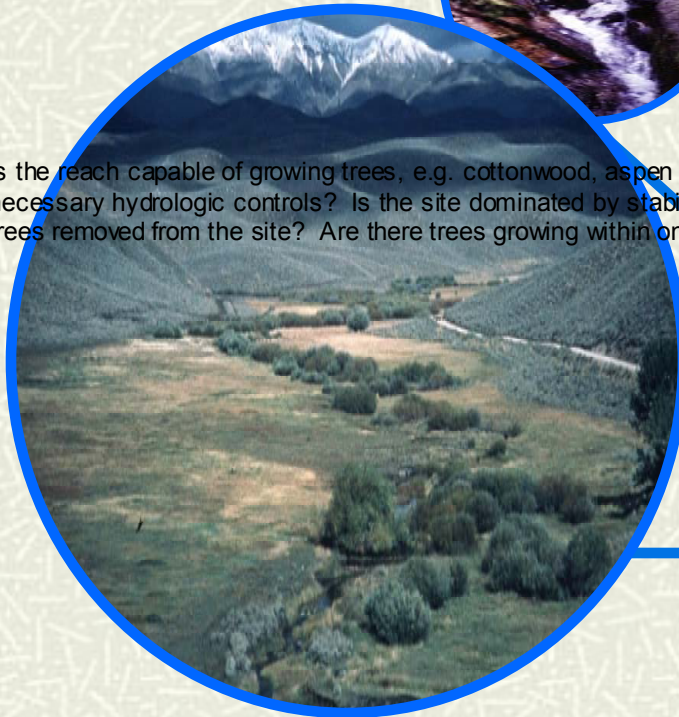
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# Natural Riparian Resources



Water

Is the reach capable of growing trees, e.g. cottonwood, aspen and conifers? Is large or coarse debris a necessary hydrologic controls? Is the site dominated by stabilizing shrub species? Has the site had the trees removed from the site? Are there trees growing within one tree height of the stream channel?



Landscape/Soil



Vegetation